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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/424,500	02/22/2000	AKIRA SATO	104788	8062

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EXAMINER

LEE, GRANVILL D

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 03/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/424,500

Applicant(s)

SATO, AKIRA

Examiner

Granvill D Lee, Jr

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-- Th MAILING DATE of this communication appears on the cov r sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Interview Summary

Application No.

09/424,500

Applicant(s)

SATO, AKIRA

Examiner

Granvill D Lee, Jr

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All participants (applicant, applicant's representative, PTO personnel):

(1) Granvill D Lee, Jr.(3) Ben Halphin.(2) Matthew Smith.

(4) _____.

Date of Interview: 05 March 2002 .

Type: a) ☒ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.

If Yes, brief description: _____ .

Claim(s) discussed: 1-30 .

Identification of prior art discussed: 11-11176 .

Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The resin injection port was not depicted in the drawings or explained well in the specification. This would be indicated in the next non-final office action .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

i) ☐ It is not necessary for applicant to provide a separate record of the substance of the interview(if box is checked).

Unless the paragraph above has been checked, THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

D tailed Action

Response to Applicant's Argument

After review of applicant's amendments and comments, the examiner finds such arguments persuasive. Applicant's comments as to Inoue et al., Hara, Ootsuki and JP 11-11176 are well taken, however in further review of the prior art, the examiner has found that JP. 08093594, JP 07241548 and JP 04326933 read upon applicant's claimed invention. As these are a new grounds for rejection, but the following rejections are not to be considered final.

Specification

The disclosure is objected to because of the following informalities: Items regarding the injection port while not depicted in the drawings is not further disclosed in the specification (See interview). Appropriate correction is required.

Claim Objections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1,3-4,12, 14 and 24 are objected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The resin

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injection port is not depicted in the drawings or elaborated enough to disclose where along the support pin is the location of this element.

Clarification and/or correction is required.

Claim 5 recites the limitation "contact portion" of support pin. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-10 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 08093594.

In view of claim 1, JP '94 discloses a device using upper and lower die (#21a & b) encompassing a semiconductor chip (#5) and securing an island portion (4a) (die pad) in a cavity with a lead frame (#10), where molding is injected into the cavity (#8). JP '94 utilizes a support pin (#9) that is on the pin axis (Fig. 4 arrows), so that when the molding is injected into the cavity, it separates from the die with the pin (Abstr.).

In view of claims 3 and 4, JP '94 points to a plurality of support pins (Fig. 3 #9).

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In view of claim 5, the support pins keep the island die pad from moving once the molding is injected (Abstr.).

In view of claims 6-9, the die can be placed in the cavity on the lower or upper side depending on engineering desire.

In view of claim 10, pins are depicted in the upper and lower portion of the semiconductor assembly (Fig. 3 #9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 11, 15-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08093594 in view of JP 07241548.

JP '94 discloses a device using upper and lower die encompassing a semiconductor chip and securing an island portion in a cavity with a lead frame, where molding is injected into the cavity. But JP '94 fails to indicate that the plurality of pins (#9) shown come in direct contact with the island die pad. In view of claim 2, JP '48 points to a holding pin (#10) that is in direct contact with the die pad. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teachings of JP '94 with those of JP '48 with the expectation of achieving better die pad

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holding results, since JP '48 clearly depicts a preference to have the holding members in direct contact with the moldings (Absrt, sol.).

In view of claim 11, JP '48 the pins are actually lowered to engage the die pad (Figs. 3 & 4) through the frame.

In view of claims 16, JP '94 points to a plurality of support pins (Fig. 3 #9).

In view of claim 17-19, the JP' 48 pins are depicted in the upper and lower portion of the molding of the semiconductor assembly (Fig. 3 #9).

In view of claim 20-23, JP '48 points to a holding pin (#10) that is in direct contact with the die pad within the cavity.

In view of claim 24, JP '94 discloses a device using upper and lower die encompassing a semiconductor chip and securing an island portion in a cavity with a lead frame.

In view of claims 25-29, JP '48 suggests that holding members are retreated to the lower surface, as only an actuator/servomotor could do.

Claims 12-14 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08093594 in view of JP 04326933.

JP '94 discloses a device using upper and lower die encompassing a semiconductor chip and securing an island portion in a cavity with a lead frame, where molding is injected into the cavity. JP '94 makes no attempt to

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include and heat radiator. JP '33 depicts (Fig. A) that a heat sink or radiator could be deployed in a semiconductor assembly (Fig. A #12). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teachings of JP '94 with those of JP '33 with the expectation of achieving better chip protection means. JP '33 sets out to employ a heat radiator in direct contact with the chip, because knowing that the temperature of the resin can be very high, the device used will protect the chip from any anticipated high temperatures.

In view of claim 13, JP '94 uses a recess portion to assist with pressurization (upper region of #6).


Contact Information

Any inquiry concerning this communication or earlier communications for the examiner should be directed to Granvill Lee whose telephone number is (703) 306-5865. The examiner can be normally reached on Monday thru Thursday from 7:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are not successful, the examiner's supervisor, Matthew Smith can be reached on (703) 308-1323. The fax phone number for this group is (703) 308-7722.

Any inquiry of a general nature relating to status or otherwise should be directed to the receptionist whose telephone number is 703-308-1782.

Examiner
Granvill Lee


MARK SMITH
SUPERVISOR/PATENT EXAMINER
TECHNOLOGY CENTER 2800